

FOREST ROAD EXCISE TAX SUMMARY SHEET

Region: Northeast

Timber Sale Name: Arden Hill

Application Number: 76474

Excise Tax Applicable Activities

Construction: 7,014 linear feet

Road to be constructed (optional and required) but not abandoned

Reconstruction: 15,809 linear feet

Road to be reconstructed (optional and required) but not abandoned

Abandonment: 12,039 linear feet

Abandonment of existing roads not reconstructed under the contract

Deactivation: _____ linear feet

Road to be made undriveable but not officially abandoned.

Pre-Haul Maintenance: 11,089 linear feet

Existing road to receive maintenance work (specifically required by the contract) prior to haul

Excise Tax Exempt Activities

Temporary Optional Construction: _____ linear feet

Optional roads to be constructed and then abandoned

Temporary Optional Reconstruction: _____ linear feet

Optional roads to be reconstructed and then abandoned

New Abandonment: _____ linear feet

Abandonment of roads constructed or reconstructed under the contract

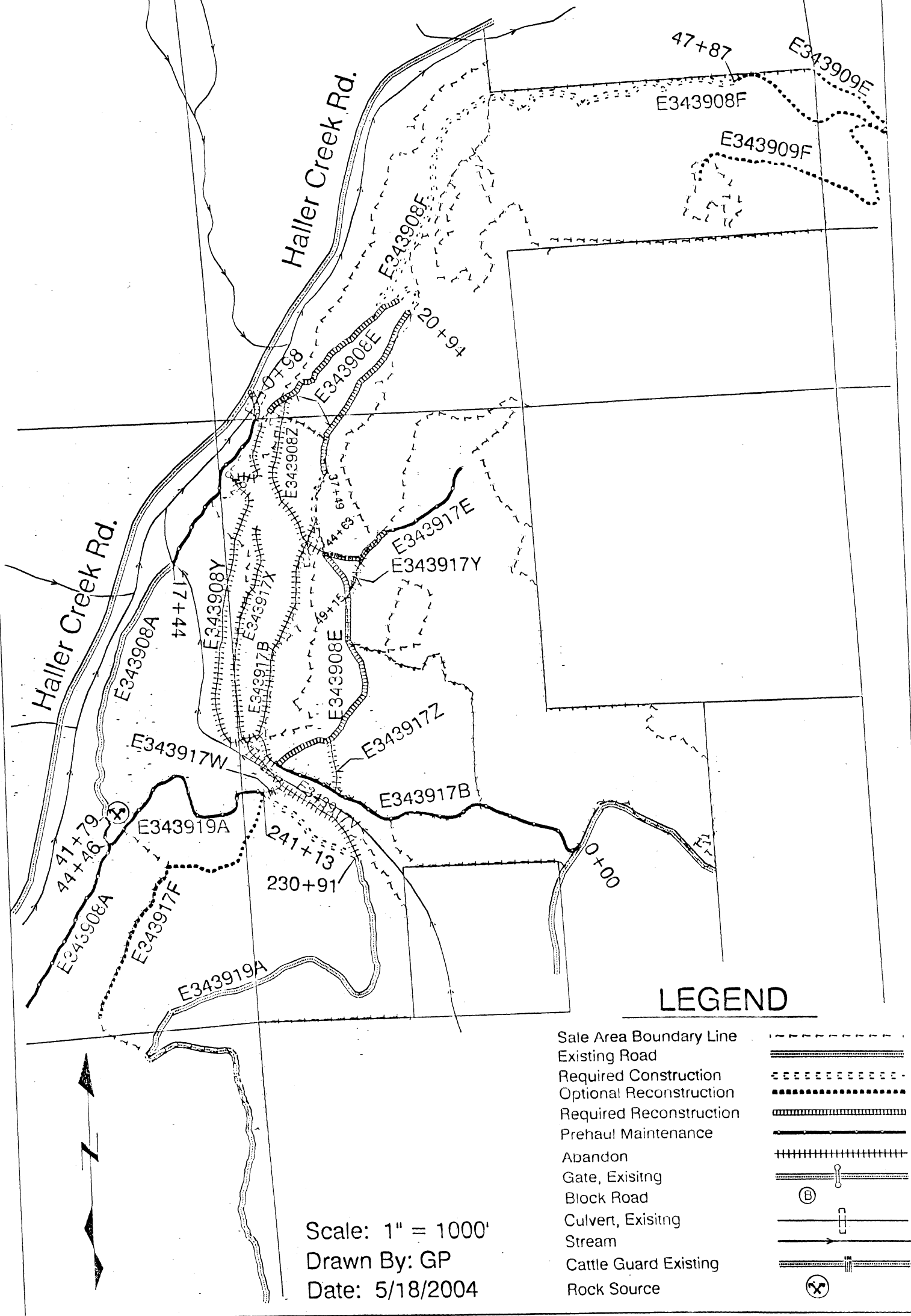
STATE OF WASHINGTON
DEPARTMENT OF NATURAL RESOURCES

Agreement No.: 30-076474
Name of Sale: Arden Hill
Trust: 03

03010341
Region: Northeast
County: Stevens

TOWNSHIP 34 NORTH, RANGE 39 EAST, W.M.

ROAD PLAN (Page 1 of 2)



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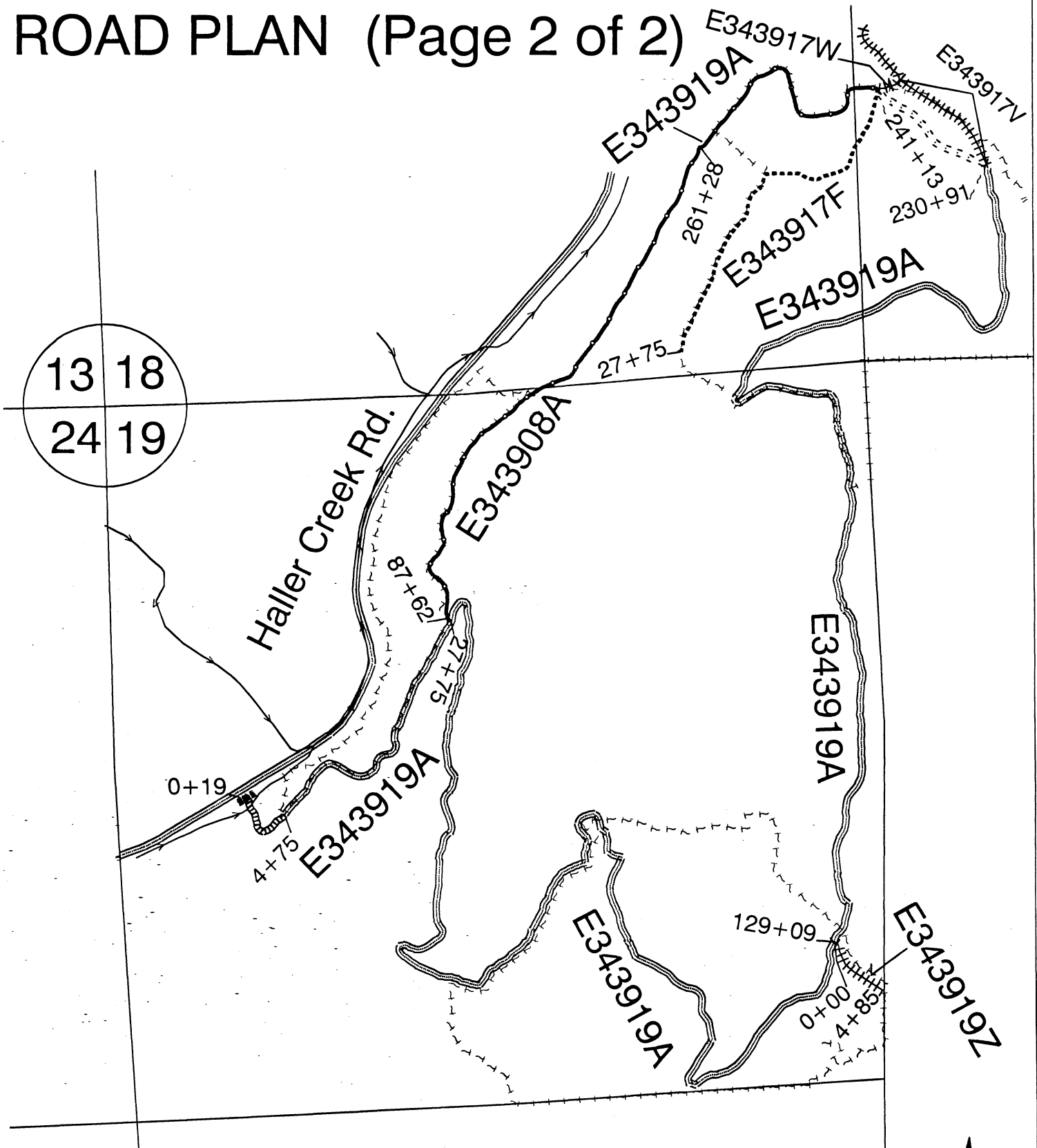
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TOWNSHIP 34 NORTH, RANGE 39 EAST, W.M.

ROAD PLAN (Page 2 of 2)



LEGEND

Sale Area Boundary Line	~~~~~
Existing Road	=====
Required Construction	- - - - -
Optional Reconstruction
Required Reconstruction	
Pre-haul Maintenance	—•—•—•—•—
Abandon	+ + + + +
Gate, Existing	— —
Block Road	Ⓟ
Culvert, Existing	— —
Culvert, New	— —
Stream	—>—
Cattle Guard Existing	— —
Rock Source	ⓧ



Scale: 1" = 1000'

Drawn By: GP

Date: 5/18/2004

STATE OF WASHINGTON
DEPARTMENT OF NATURAL RESOURCES

ROAD PLAN

AGREEMENT NUMBER: 30-076474

SALE NAME: Arden Hill

ROAD PLAN DATE: 5/18/2004

SCOPE OF PROJECT

This project includes, but is not limited to construction including; clearing; grubbing; right-of-way debris disposal; excavation and/or embankment to subgrade, acquisition and installation of drainage structures, drilling and blasting of rock in the course of right-of-way construction may be encountered.

DEFINITIONS

Construction

Where in the terms of this contract the activity of building a new right of way and road over ground that has not had a previously established road, or is a relocation that is at least a full right of way width from an existing road.

Reconstruction

Where in the terms of this contract the activity of right of way development and road building in a location that lies completely or partially within the right of way of an existing road and which activity is required or recommended to improve upon the pre-existing conditions. Reconstruction includes activities that would be classified as a **Class II, Class III or Class IV Special Forest Practice**.

Pre-haul Maintenance

Where in the terms of this contract the activity of right of way development and road building in a location that lies completely or partially within the right of way of an existing road and which activity is required or recommended to improve upon the pre-existing conditions. Pre-haul maintenance includes activities that would be classified as a **Class 1 Forest Practice**.

Maintenance

Where the pre-existing conditions of an existing road were acceptable to the State prior to this contract, and the repair and/or replacement of materials, components or structures become necessary as result of deterioration by use or inordinate damage during the terms of this contract.

Designated Skid Trail

Where the State has marked a preferred location for the forwarding of valuable materials to an established road or landing, and which alternatives to the designated location require approval from the Contract Administrator.

Abandonment

Where in the terms of this contract the activity of blocking, controlling the erosion and water movement within natural drainages, removing all drainage structures, and removing unstable fill slopes that have delivery potential. This activity may include but is not limited to obliteration of road prisms, haying and revegetation of exposed soils, and scattering of natural debris.

SECTION 1 - GENERAL CLAUSES

- 1.1 Clauses in this plan apply to all construction and/or reconstruction, including landings unless otherwise noted.
- 1.2 Construction, reconstruction, pre-haul maintenance, and abandonment of the following road/s are required. All road/s shall be constructed on the State's location, and in accordance with this Road Plan.

<u>Road</u>	<u>Length</u>	<u>Type</u>
E343908A	2.69 stations	Reconstruction
E343908A	60.58 stations	Pre-haul Maintenance
E343908E	12.05 stations	Construction
E343908E	55.95 stations	Reconstruction
E343908F	47.87 stations	Construction
E343908Y	34.42 stations	Abandonment
E343908Z	15.38 stations	Abandonment
E343917B	30.16 stations	Pre-haul Maintenance
E343917B	22.75 stations	Abandonment
E343917E	5.91 stations	Reconstruction
E343917V	14.64 stations	Abandonment
E343917W	1.81 stations	Abandonment
E343917X	19.20 stations	Abandonment
E343917Y	4.17 stations	Abandonment
E343917Z	5.44 stations	Abandonment
E343919A	4.75 stations	Reconstruction
E343919A	10.22 stations	Construction
E343919A	20.15 stations	Pre-haul Maintenance
E343919Z	4.85 stations	Abandonment

- 1.3 Construction or reconstruction of the following road/s is not required. Road/s constructed shall be on the State's location and in accordance with this Road Plan.

<u>Road</u>	<u>Length</u>	<u>Type</u>
E343908F	14.90 stations	Reconstruction
E343909E	8.28 stations	Reconstruction
E343909F	27.81 stations	Reconstruction
E343917E	10.05 stations	Reconstruction
E343917F	27.75 stations	Reconstruction

- 1.4 This sale also includes, but is not limited to reconstruction including;

<u>ROAD</u>	<u>STATIONS</u>	<u>REQUIREMENTS</u>
E343908A	0+00 – 2+69	Reshape/apply rock to road surface, brush right of way, provide for drainage.
E343908E	1+12 – 17+15 20+94 – 37+49 44+63 – 68+00	Reshape road surface, install rolling dips, brush right of way.
E343917E	0+00 – 5+91	Reshape road surface, brush right of way, provide for drainage.
E343919A	0+00 – 4+75	Reshape/apply rock to road surface, brush right of way, provide for drainage.

- 1.5 This sale also includes, but is not limited to pre-haul maintenance including;

<u>ROAD</u>	<u>STATIONS</u>	<u>REQUIREMENTS</u>
E343908A	2+69 – 17+44 41+79 – 87+62	Reshape road surface, brush right of way, provide for drainage.
E343917B	0+00 – 30+16	Reshape road surface, brush right of way, provide for drainage.
E343919A	241+13 – 261+28	Reshape road surface, brush right of way, provide for drainage.

- 1.6 If the Purchaser desires a road location or design change, a revised Road Plan shall be submitted to the State for consideration.
- 1.7 On this plan, quantities are minimum acceptable values. Additional quantities required by the State because of hidden conditions, or the Purchaser's choice of construction season or techniques shall be at the Purchaser's expense. Hidden conditions include, but are not limited to, solid subsurface rock, subsurface springs or saturated ground, and/or unstable soil conditions.
- 1.8 Purchaser shall not use roads constructed or reconstructed under this Road Plan for hauling, other than timber cut on the right-of-way, without written approval from the Contract Administrator.
- 1.9 Roads shall be constructed using track mounted hydraulic or cable excavators unless otherwise authorized, in writing, by the Contract Administrator.
- 1.10 Pioneering shall not extend past construction that will be completed during the current construction season. Drainage shall be provided on all uncompleted construction, as approved in writing by the Contract Administrator.

Clearing and grubbing shall be completed prior to starting excavation and embankment.

Culvert placement in live streams shall precede embankment where culverts are to be placed along natural ground slopes. Temporary diversion culverts shall be provided when designed culverts are elevated above natural ground within embankments.

Culverts shall be installed in completed subgrade as construction progresses.

Subgrade, ditches and culvert installation shall be completed and are subject to written approval by the Contract Administrator prior to the application of rock, or final subgrade compaction.

- 1.12 Construction restrictions apply to this contract. All construction and transportation of heavy equipment and/or trucks is prohibited between and including the following dates, except as may be authorized, in writing, by the Contract Administrator.

January 1 to June 1

- 1.13 Designated Skid Trails are included as part of this project. The intended uses of Designated Skid Trails are for transferring merchantable materials to/from/between landings and roads with log skidding equipment. The grades and location are not considered by the State to be suitable for truck traffic. Designated Skid Trails are considered, as part of this contract, to be single lane with one direction of traffic at a time, unless the Contract Administrator approves alternate traffic and width plans in writing.

- 1.14 Landings are required to be constructed at specific locations. The relocation of landings in the vicinity of those designated, and the use of additional landings in this project shall be subject to written approval from the Contract Administrator. Landings shall be sloped sufficiently to provide controlled drainage, without ponding or concentration of sediments into streams.
- 1.21 Maintenance on all road/s used, constructed or reconstructed under this Road Plan shall be performed in accordance with the Forest Access Road Maintenance Specifications.

Rutting of finished road surfaces shall not exceed 6 inches in depth. In the event that surface or base stability problems may persist, the purchaser/contractor will be required to cease operations, or perform corrective maintenance and/or repairs, subject to specifications within this contract, and the written approval of the Contract Administrator.
- 1.23 Snowplowing shall not be permitted unless authorized, in writing, by the Contract Administrator.

SECTION 2 - CLEARING

- 2.1 Fell all vegetative material larger than 6 inches d.b.h., or over 20 feet high between the marked right of way boundaries, and within waste and/or debris areas. If clearing limits are not marked in the field, clearing limits are as specified on the Typical Section Sheet.
- 2.2 Deck all merchantable right-of-way timber. The decks shall be parallel to the road centerline, and within the cleared right-of-way. The decks shall be free of dirt, limbs and other debris, and removable by standard log loading equipment from the completed roadbed.
- 2.3 Brushing shall be done in accordance to the attached Brushing Detail. Lesser standards may be applied with permission by the Contract Administrator.

SECTION 3 - GRUBBING

- 3.1 All stumps shall be removed that fall between grubbing limits shown on the Typical Section Sheet. Those with undercut roots shall be removed. Stumps over 22 inches in diameter shall be split. Stumps over 40 inches in diameter shall be quartered.
- 3.2 Grubbing Limits are defined as the entire area between the external limits shown on the Typical Section Sheet.
- 3.3 Removal of stumps shall not be required, within the waste and/or debris areas, provided that they are cut flush with the ground.

SECTION 4 - DEBRIS DISPOSAL AND REMOVAL

- 4.1 Right-of-way debris is defined as all nonmerchantable vegetative material larger than one cubic foot in volume, within waste area and/or clearing limits as shown on the Typical Section Sheet.
- 4.6 Right-of-way debris shall be scattered outside the right-of-way limits in natural openings. Debris shall not be placed against standing timber. Where natural openings are unavailable or restrictive, alternative debris disposal methods shall be subject to the written approval of the Contract Administrator.

SECTION 5 - EXCAVATION

- 5.1 Unless controlled by construction stakes or specific design sheets herein, road/s shall be constructed in accordance with dimensions shown on the Typical Section Sheet.

Excavation and embankment slopes shall be constructed to a uniform line, and left rough for easier vegetation.

Organic material shall be excluded from road prism embankments.

Road pioneering operations shall not undercut the final slope, deposit excavated material outside the clearing limits, or restrict drainage.

- 5.2 Purchaser or road construction contractor shall not bury merchantable material.

- 5.3 The construction of road grade and alignment shall conform to the State's marked location. The reconstruction of existing road grades shall conform to the original location except as directed by the contract administrator. Grade and alignment shall have smooth continuity, without abrupt changes in direction.

Construction limitations are as follows:

<u>Favorable Grade</u>	<u>Adverse Grade</u>	<u>Minimum Curve Radius</u>
18%	12%	60 feet

Changes in road grade shall not exceed 7%, except as required in this clause.

Adverse grades on curves shall not exceed 10 percent of the curve radius.

Favorable grades through switchbacks shall not exceed 12%.

Transition grades entering and leaving switchbacks shall not exceed a 5% grade change.

The switchback is defined as, the curved segment of road, between a beginning and end of the same curve, where the change of traffic travel direction is greater than 90 degrees.

Transition grades required to meet switchback grade limitations, shall be constructed on the tangents preceding and departing from the switchbacks.

- 5.5 Curve widening shall be added to the inside of curves as follows:

2 feet extra	80 to 100 foot radius curves
4 feet extra	60 to 80 foot radius curves

- 5.7 Roads shall be built to the dimensions shown on the Typical Section Sheet.

- 5.8 Except as construction staked or designed, excavation slopes shall be constructed no steeper than shown on the following table:

<u>Material Type</u>	<u>Excavation Slope Ratio</u>
Common Earth (on side slopes to 55%)	1:1
Common Earth (55% to 70% side slopes)	3/4:1
Common Earth (on slopes over 70%)	1/2:1
Fractured or loose rock	1/2:1
Hardpan or solid rock	1/4:1

5.9 Excavation and embankment slopes shall be constructed to a uniform line and left rough for easier re-vegetation.

5.10 Except as construction staked or designed, each embankment side shall be widened as follows:

<u>Height at Centerline</u>	<u>Subgrade Widening</u>
Less than 6 feet	2 feet
6 feet and over	4 feet

5.11 Except as construction staked or designed, embankment slopes shall be constructed no steeper than shown on the following table:

<u>Material Type</u>	<u>Embankment Slope Ratio</u>
Common earth and rounded gravel	1-1/2:1
Angular rock	1-1/4:1
Sandy soils	2:1

5.12 All embankment and waste material shall be compacted. The minimum acceptable compaction is achieved by placing embankments in 2 foot or shallower lifts, and routing excavation equipment over the entire width of each lift. Except for areas specifically requiring keyed embankment construction, side hill embankments too narrow to accommodate excavation equipment may be placed by end dumping or side casting until sufficiently wide to support the equipment.

5.14 Except as construction staked or designed, where side slopes exceed 45 percent, full bench construction shall be utilized for the entire subgrade width.

5.15 Waste material may be deposited adjacent to the road prism on side slopes up to 55 percent if the waste material is compacted, free of debris, and more than 50 feet away from live streams and/or culvert installations. On side slopes of 55 percent or more, all excavation shall be endhauled or pushed to designated embankment sites, except as approved in writing by the Contract Administrator. All waste embankments shall be compacted in horizontal layers not exceeding 2 feet.

5.24 Turnouts shall be constructed at a maximum distance of 1000 feet apart, unless shown otherwise on drawings. Turnouts shall be intervisible.

SECTION 6 - DRAINAGE

6.1 Finished subgrade and running surfaces shall be sloped as shown on the Typical Section Sheet, uniform, firm, rut-free, and shaped to ensure road surface runoff in an even, unconcentrated manner.

6.2 Berms shall be removed from shoulders to permit water runoff. The construction of ditchouts will be required where ponding will result from the effects of sidecast debris and waste material.

- 6.4 Permanent culverts shall be installed as part of this contract. The minimum requirements shall be as designated on the Culvert and Drainage list, and the Road Plan map. Permanent culverts shall be supplied, installed, and maintained by the purchaser during the limits of this contract.

Permanent culverts shall be galvanized (AASHTO Specification No. M36) or corrugated polyethylene tubing (AASHTO Specification No. M196) culverts as designated on the Culvert List.

Annular corrugated bands and culvert ends shall be used on metal culverts. Bands shall have a minimum width of 12 inches. Manufacturer's approved connectors shall be used for corrugated polyethylene tubing.

- 6.5 Metal, concrete, or plastic culverts and bands removed from the roadbed shall be removed from state land prior to termination of this contract.
- 6.10 On required roads, permanent culverts, downspouts, flumes, bands and gaskets as listed on the Culvert List which are not installed, shall remain the property of the State.
- 6.11 Culvert, downspout, flume and energy dissipater installation shall be in accordance with the Culvert and Drainage Specification Detail.
- 6.13 Any damaged galvanized coating or cut ends shall be treated with a minimum of 2 coats of zinc rich paint.
- 6.14 Cross drains and surface culverts on road grades in excess of 3 percent shall be skewed at least 30 degrees, from perpendicular to the road centerline.
- Cross drain culverts shall be installed at a slope steeper than the incoming ditch grade, but not less than 3 percent nor more than 10 percent.

- 6.16 Installation of culverts 30 inches in diameter and over shall be subject to written approval by the Contract Administrator prior to commencing the backfill.

Pipe arches and/or multi-plate culverts shall be installed according to the National Corrugated Pipe Association Installation Manual, and are subject to the inspection and approval of the Contract Administrator prior to placement and backfill.

- 6.18 Outfalls from drainage structures shall not terminate directly on unprotected soil because of the potential for erosion. Downspouts, flumes and energy dissipaters shall be installed to prevent erosion, and are subject to the approval of the Contract Administrator.

Downspouts and flumes longer than 10 feet shall be staked on both sides at maximum intervals of 10 feet with 6-foot heavy-duty steel posts, and fastened securely to the posts with No. 10 galvanized smooth wire, in accordance with the Culvert and Flume Installation Detail.

- 6.20 Ditch reshaping, new ditch construction, and headwall construction shall be done concurrently with construction or reconstruction of the subgrade, and prior to any application of surfacing rock. Ditches shall drain to culverts, ditchouts, and natural drainages. The shape of ditches shall be in accordance with the Typical Section Sheet and the Culvert and Drainage Specification Detail.

Site indicative ditching may be required on this project regardless of road template specifications on the Typical Section Sheet, which may require insloping or outsloping of the subgrade. The purchaser/operator will be required, as part of this contract, to construct ditches as directed by the Contract Administrator, where unforeseen site conditions dictate. Ditching will generally be required to control runoff on steeper grades, in conjunction with culvert installations, and approaches to fill embankments.

- 6.22 Catch basins shall be constructed to resist erosion, with back slopes consistent with standards in Section 5. Minimum dimensions shall be 4 feet wide and 4 feet long, unless specified otherwise on the Culvert List.
- 6.23 Headwalls shall be constructed in accordance with the Culvert and Drainage Specification Detail. Headwalls shall be constructed at all cross drain culverts, except temporary culverts. Headwalls shall also be constructed at any culvert identified on the Culvert and Drainage List that specifies the placement of riprap.
- 6.24 Embankment slopes adjacent to culvert inlets and/or outlets at live stream crossings shall be armored with riprap, for a distance of 1 culvert diameter on each side of the pipe, and 1 culvert diameter above the pipe in accordance with the Culvert and Drainage Specifications Detail.
- 6.28 Rolling dips shall be constructed in accordance with the Rolling Dip Detail, at a maximum spacing that will produce a vertical drop of no more than 10 feet between constructed dips, or between natural drainage paths. The spacing and number of rolling dips may be adjusted by the Contract Administrator.

Rolling dips are constructed by increasing the outslope of the subgrade surface at the required locations. This includes a gradual transition into and out of the rolling dip from the subgrade template as specified on the Typical Section Sheet.

Excavated material from rolling dip construction shall not remain on the subgrade surface in the form of a berm or waterbar. Sidecasting of material removed with excavation equipment shall be sufficient to form a ditchout to direct surface runoff into, through, and away from the rolling dip, so as to not create ponding.

Discharge of water from rolling dips should be directed to reduce sediment movement and sideslope erosion. Direct the discharge into debris concentrations, onto rocky sites, preferably onto ridges rather than directly into draws. Construction location and workmanship are subject to the approval of the Contract Administrator.

- 6.30 Riprap required as part of the contract shall conform to the minimum riprap specifications for the Riprap Type listed below. Minimum specifications require that riprap be placed at a width of one culvert diameter on each side of the culvert entrance and/or outlet, and to a height of two culvert diameters above the top of the culvert. Use of materials and other sources of riprap are subject to the written approval of the Contract Administrator.

Riprap Type

Light Loose Riprap

- 6.32 Riprap shall be set in place in conjunction with the construction of embankments. Riprap shall be placed on shoulders, slopes, around culvert inlets and/or outlets as designated on the Culvert and Drainage List or as directed by the Contract Administrator. No placement by end-dumping or dropping of riprap shall be allowed. Riprap shall not restrict the flow of water into culvert inlets or catchbasins.

- 6.33 Riprap specifications require the material to be hard, sound and durable. It shall be free from segregation, seams, cracks and other defects that tend to destroy its resistance to weather and stream action. The riprap material shall be free of rock fines, soil, organic debris, or other extraneous material.

Heavy Loose Riprap - shall meet the following grading requirements:

Min / Max	Minimum Size	Maximum Size
40% / 90%	35" (2001 lbs)	---
70% / 90%	20" (373 lbs)	---
10% / 30%	---	10" (47 lbs)

Light Loose Riprap - shall meet the following grading requirements:

Min / Max	Minimum Size	Maximum Size
20% / 90%	20" (373 lbs)	36" (2177 lbs)
80% / --	12" (81 lbs)	30" (1260 lbs)
10% / 20%	---	10" (47 lbs)

Concrete Slabs - shall meet the following requirements:

Minimum thickness (h) of 3", minimum width (w) of 12", minimum depth (d) of 12". Slabs shall be placed horizontal in a shingled effect according to the Riprap Specifications.

Concrete Sacks - shall meet the following requirements:

Minimum empty sack dimensions: 12" wide by 24" deep. Aggregate mixture shall be 4 parts sand/gravel and a minimum of 1 part Portland Cement. Openings of each sack shall be securely closed and placed opposite to potential water turbulence. Sacks shall be laid horizontal, in a shingled effect, according to the Riprap Specifications.

SECTION 7 - ROCK

- 7.2 Rock used under this contract may be obtained from the following source.

<u>Source Location</u>	<u>Source Owner</u>	<u>\$/yard</u>
E343908A @ station 41+79	DNR	N/A

Rock used under this contract may be obtained from other sources. Alternate rock sources used will be subject to the written approval of the Contract Administrator.

- 7.5 Select Material is required for surface repair as part of this contract. Removal area for Select Material is designated as a rock source/s on the Road Plan Map. Placement and quantities of Select Material shall be according to the Rock List.

7.17 Pit operations shall be done according to a plan prepared by the Purchaser, and are subject to the approval of the Contract Administrator. Minimum requirements for the pit plan shall include the following requirements:

- 1) The Operator shall provide notice to the Contract Administrator 5 days prior to commencing any rock removal activities.
- 2) Pit operations shall be subject to the written approval of the Contract Administrator.
- 3) The Operator shall remove vegetation and overburden for a distance of 10 feet back from the top of any cut banks in the pit site. No undercutting shall be permitted.
- 4) Disposal of overburden and vegetative material shall be as directed, and subject to approval, by the Contract Administrator.
- 5) The Operator shall maintain drainage of surface water from the pit site. Water carrying sediment from the pit site during pit operations shall be contained through the use of settling ponds and/or filter fabric installations, to prevent sediment from being carried by surface water runoff into streams and/or collected in water bodies. Alternative prevention methods are subject to the written approval of the Contract Administrator. The cost of constructing any required sediment containment system/s shall be the responsibility of the Operator.
- 6) The maximum height of gravel/rock face in the pit shall be 15 feet. Excavation of gravel/rock shall be in lifts from a series of level benches within the pit to meet the requirement.
- 7) The minimum width of benches shall be 15 feet, unless specified otherwise, in writing by the Contract Administrator.
- 8) Reclamation and cleanup shall be accomplished within 30 days after the completion of rock removal from the pit.
- 9) Reclamation shall be as approved by the Contract Administrator, and shall consist of; rock faces shall be scaled to remove loose material constituting a hazard; gravel pits shall have the cut banks sloped to a 1-1/2 to 1 backslope, and left in a uniform appearance; overburden disposal piles shall be reduced by leveling and compaction; drainage of the pit site shall ensure runoff in a even and unconcentrated manner.

7.18 Rock drilling and shooting shall meet the following specifications:

- 1) Oversize material is defined as rock fragments too large to be converted by the purchaser to a size that will meet the specifications used for construction in this contract.
- 2) Oversize material in the pit during operations shall not exceed 5 percent of the total volume mined for this contract/sale.
- 3) No oversize material shall remain in the pit after completion of this contract/sale, unless the Contract Administrator grants permission in writing.

7.20 Rock applied as surfacing, as designated on the Rock list shall be angular material and have a minimum of 90 percent of the top 4 inches pass a 3-inch square opening. Specifications may be adjusted with approval from the Contract Administrator.

- 7.21 Screening and/or crushing operations, and placement of oversize material shall be conducted in or near the pit site, as approved in writing by the Contract Administrator.
- 7.22 The Operator may use in place processing, such as a grid roller or other method, if suitable crushing can be demonstrated to meet the surfacing size restrictions. The use of in place processing methods is subject to written approval by the Contract Administrator.
- 7.30 Placement and compaction of rock shall be accomplished in lifts not to exceed 6 inches uncompacted depth.
- 7.31 Each lift of rock shall be sloped as shown on the Typical Section Sheet, and shall be uniform, firm, rut free, and shaped to ensure surface runoff in an even, unconcentrated manner.
- 7.32 Placement of rock shall be accomplished with a crawler tractor in lifts no greater than 6", unless the Contract Administrator approves other methods in writing.

Compaction shall be completed after rock has been spread into place, by walking the spread equipment back and forth over the entire spread surface. The traffic of rock hauling equipment shall be directed to use the entire running surface, and avoid driving in the same tracks, to assist in surface compaction.

- 7.40 Rock shall be applied as designated on the Rock List and/or spot patching as directed by the Contract Administrator. Quantities specified herein are minimum requirements, and shall not be subject to reduction.
- 7.41 Measurement of specified rock depths, are defined as the compacted depth/s using the compaction methods required in this contract.
- 7.42 Turnouts, turnarounds, and curve widening shall have rock applied to the same depth and specifications as the traveled running surface.

SECTION 10 - ROAD AND LANDING ABANDONMENT

- 10.1 The following road/s shall be abandoned by the Purchaser at the termination of use or within 30 days following completion of timber harvest removal prior to the termination of this contract.

<u>Road</u>	<u>Stations</u>	<u>Type</u>
E343908Y	0+00 - 34+42	Medium
E343908Z	0+00 - 15+38	Medium
E343917B	30+16 - 52+91	Medium
E343917V	0+00 - 14+64	Medium
E343917W	0+00 - 1+81	Medium
E343917X	0+00 - 19+20	Medium
E343917Y	0+00 - 4+17	Medium
E343917Z	0+00 - 5+44	Medium
E343919Z	0+00 - 4+85	Medium

10.4 Medium Abandonment shall consist of: filling the ditches; ripping the surface to a minimum depth of 10 inches; outslowing the surface at a minimum of 30%; removing embankments, sidecast fill, and placing material into cutbanks and shaping banks to conform with natural ground; constructing non-drivable water bars, as directed by Contract Administrator, in conformance with the attached NON DRIVABLE WATER BAR DETAIL at a maximum spacing which will produce a vertical drop of no more than 10 feet between water bars or between natural drainage paths and with a maximum spacing of 100 feet; or as marked in the field; skewing water bars at least 30 degrees from perpendicular to the road centerline on roads in excess of 3% grade; keying water bars into ditchline; blocking the roads to 4X4 traffic using stumps, large boulders, and logging debris; removing culverts and bridges from State Land; removing ditch cross drain culverts and leaving the resulting trench open; sloping all trench walls and approach embankments no steeper than 1.5:1; removing fill; grass seeding concurrently with abandonment; covering, concurrently with abandonment, all exposed soils within 100 feet of any live stream, with an 8 inch deep layer of straw.

10.6 On the following road/s, Purchaser shall remove existing culverts and leave the resulting trench open. The trench bottom shall have a minimum width of 10 feet or conform to natural ground. Excavated material shall be placed in a waste area designated by the Contract Administrator.

<u>Road</u>	<u>Stations</u>
E343917B	50+44

10.7 On the following road/s, Purchaser shall remove existing culverts from live streams and leave the resulting trench open with excavation slopes and trench bottom as specified. The trench bottom shall conform to natural stream profile. Excavated material shall be placed in the waste area approved in writing by the Contract Administrator. Culvert removal from live streams shall be in accordance with the Hydraulic Project Approval.

<u>Road</u>	<u>Stations</u>
E343908A	0+98
E343917V	11+29

FOREST ROAD ACCESS

Road Maintenance Specifications

I. Prior to Acceptance of Contract or Acceptance on Timber Sale

A. Cuts and Fills

- (1) Maintain slope lines as constructed. Remove slides from the ditches and roadway. Replace fills to 1 1/2:1 slopes with selected material or as directed. Remove overhanging material from cut slopes.
- (2) Material from slides or other sources requiring removal must not be deposited in streams or at locations where it will erode into streams or water courses.
- (3) Undesirable slide materials and debris must not be allowed to contaminate or mix with surface material.

B. Roadway Surfaces

- (1) Grade and shape road surface, turnouts and shoulder to original crown, inslope or outside as directed to provide suitable traveled surface and surface water runoff in an even, unconcentrated manner.
- (2) Blading must not undercut backslopes at bottom of cut slopes.
- (3) Watering may be required to control dust and to retain fine surface rock.
- (4) Desirable surface material shall not be bladed off roadway.
- (5) Replace surface material lost or worn away.
- (6) Remove berms except as otherwise directed by the State.

C. Drainage

- (1) Keep ditches and drainage channels at outlets and inlets of culverts clear of obstructions to not interrupt flow and cause ponding.
- (2) Inspect and clean culverts at least monthly, with additional inspection during storms and periods of high runoff. This must be done even during periods of inactivity.
- (3) Place non erodable material or rock at drainage outfalls as required to stabilize the channel.
- (4) Maintain drainage structures as required to function as intended.
- (5) Keep silt bearing surface runoff from contaminating live streams.

D. Structures

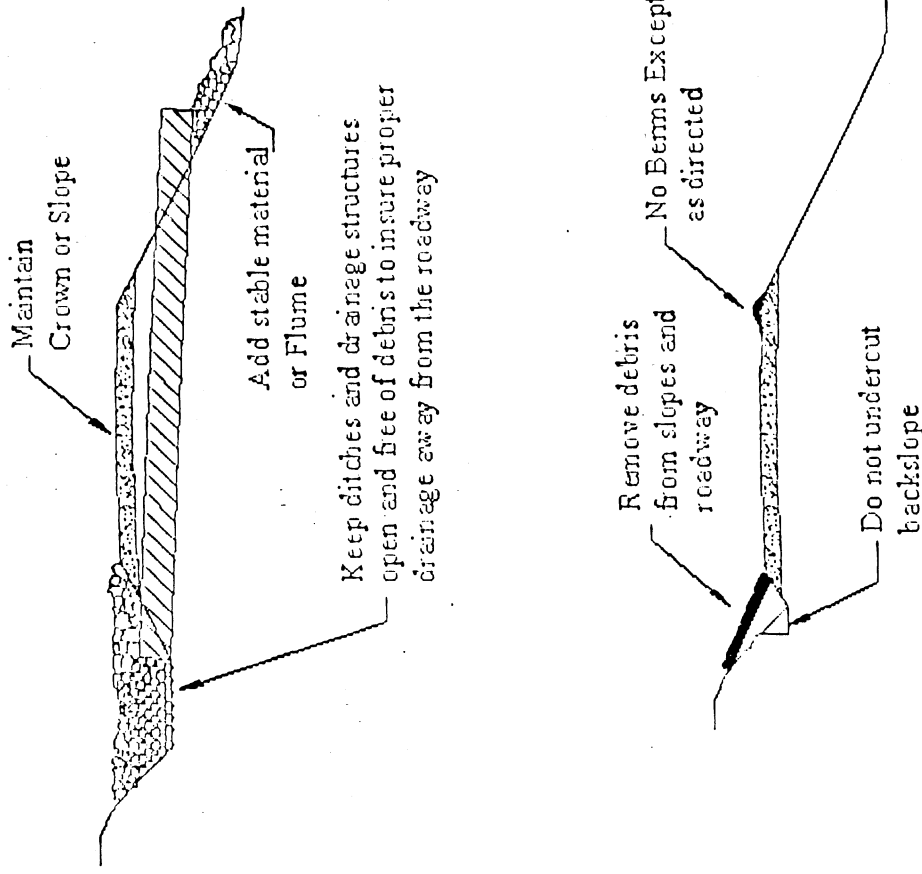
- (1) Repair bridges, culverts, cattle guards, fences and other road structures to conditions required by construction specifications.

E. Termination of Use, or End of Season

- (1) Do maintenance work to minimize damage from the elements such as blading to insure correct runoff, ditch and culvert clearing and water bars.

F. Debris

- (1) Remove fallen timber, limbs, stumps from slopes and roadway, ditchlines and culvert inlets.



BRUSHING DETAIL

TYPICAL BRUSHING LIMITS SECTION

BRUSHING LIMITS

Trim all limbs, vegetation, and down logs that fall within brushing limits.

14' min

Transition Zone

5'

6' min

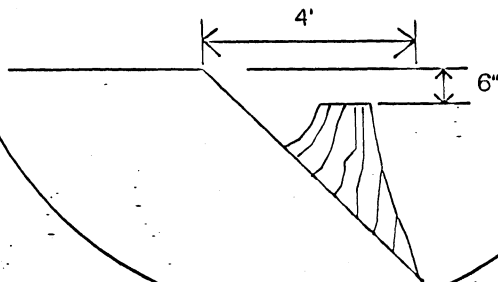
width varies

4' min

All limbs on standing trees that extend into the brushing limits shall be trimmed within 6" of the stem.

Any trees less than 6" in diameter shall be cleared within the transition zones.

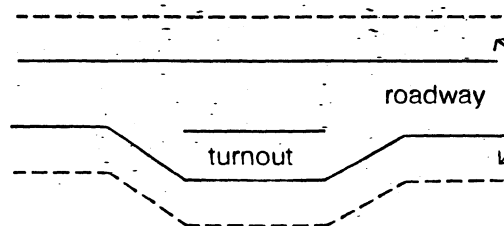
Trim all stumps and vegetation within 4' of edge of road and in ditch to at least 6" below the elevation of the edge of road.



Transition Zone

5'

CURVE BRUSHING PLAN



roadway

turnout

Brushing limits as shown on typical section

TURNOUT BRUSHING PLAN

50' taper

extra 4' brushing limits on inside of curve.

50' taper

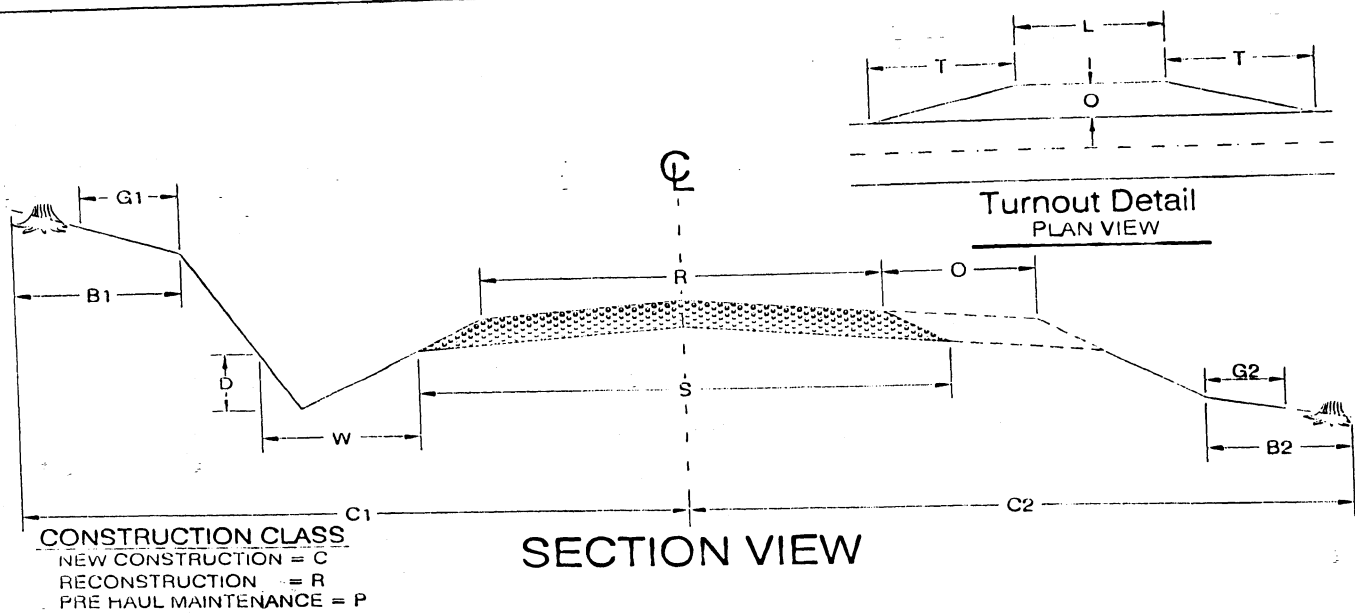
1. All vegetation within the brushing limits shall be cut to within 8" of the ground, unless otherwise directed by the contract administrator.
2. All brush, trees, limbs, etc. shall be removed from the road surface and ditchline.
3. All debris that may roll or migrate into the ditchline shall be removed.

STATE OF WASHINGTON
DEPARTMENT OF NATURAL RESOURCES

Application No.: 30-

Name of Sale: Arden Hill

TYPICAL SECTION SHEET

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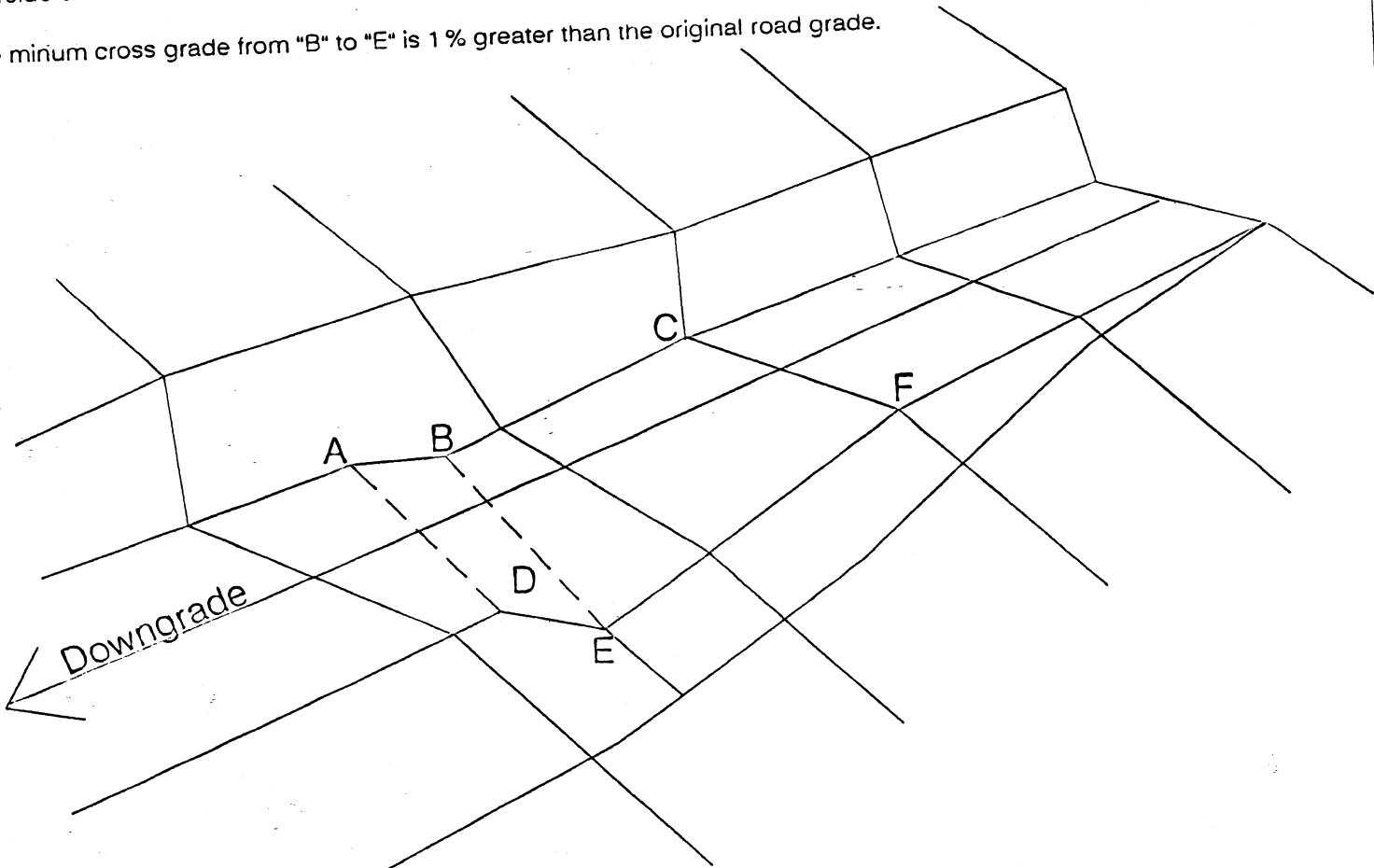
DATE: 5/18/2004

DRAWN BY: RK

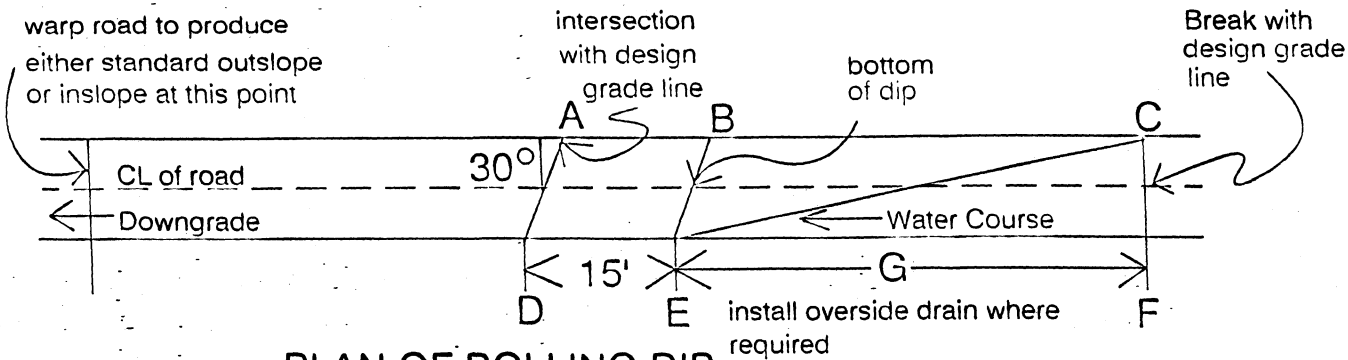
Note: Plan of dip shown is for an outsloped rolling dip. Dips may be either insloped or outsloped. When insloped, dips shall discharge into a culvert, drop inlet, overside drain, or drainage ditch. When outsloped, they shall discharge into an overside drain or on to natural ground.

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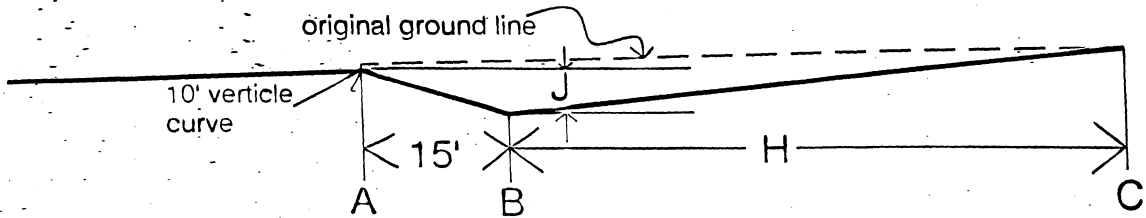
The minium cross grade from "B" to "E" is 1 % greater than the original road grade.



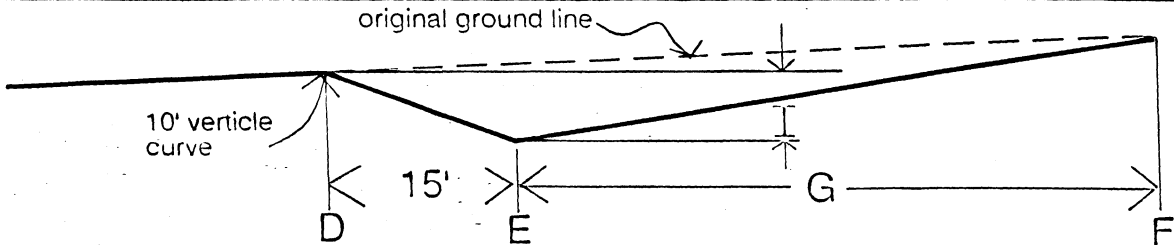
STANDARD 30° ROLLING DIP



PLAN OF ROLLING DIP



ROAD PROFILE ALONG A-B-C OF ROLLING DIP



ROAD PROFILE ALONG D-E-F OF ROLLING DIP

TABLE OF ROLLING DIP DEMENSIONS

Width	12'	14'	16'	ALL		
Dimension	G			H	I	J
Road Grade						
6% and under	60	61	62	52	.8	0.3
8%	70	71	72	62	1.0	0.2
10%	80	81	82	72	1.1	0.1

STATE OF WASHINGTON
DEPARTMENT OF NATURAL RESOURCES

Date: 5/18/2004

Name of Sale: Arden Hill

Application No.: 30-07

CULVERT & DRAINAGE LIST

Road Name	Station	CULVERT			LENGTH			RIPRAP			Ditchout	Staked	Rolling Dip	NOTES
		Diameter	Gauge	Skew	Culvert	Downspout	Flume	Inlet C.Y.	Outlet C.Y.	Catchbasin				
E343908A	0+98													8, both cmp's at end of sale
	56+67													cut off shotgun cmp
	60+67													clean inlet/outlet
E343908E														
	4+87											X	9	
	6+73											X	9	
	10+18											X	9	
E343908F														
	2+49											X	9	
	8+37											X	9	
	10+13											X	9	
	16+06											X	9	
	20+68											X	9	
	27+00											X	9	
	33+19											X	9	
40+94											X	9		
E343917B														
	50+44												8	
E343917V														
	11+29												8	

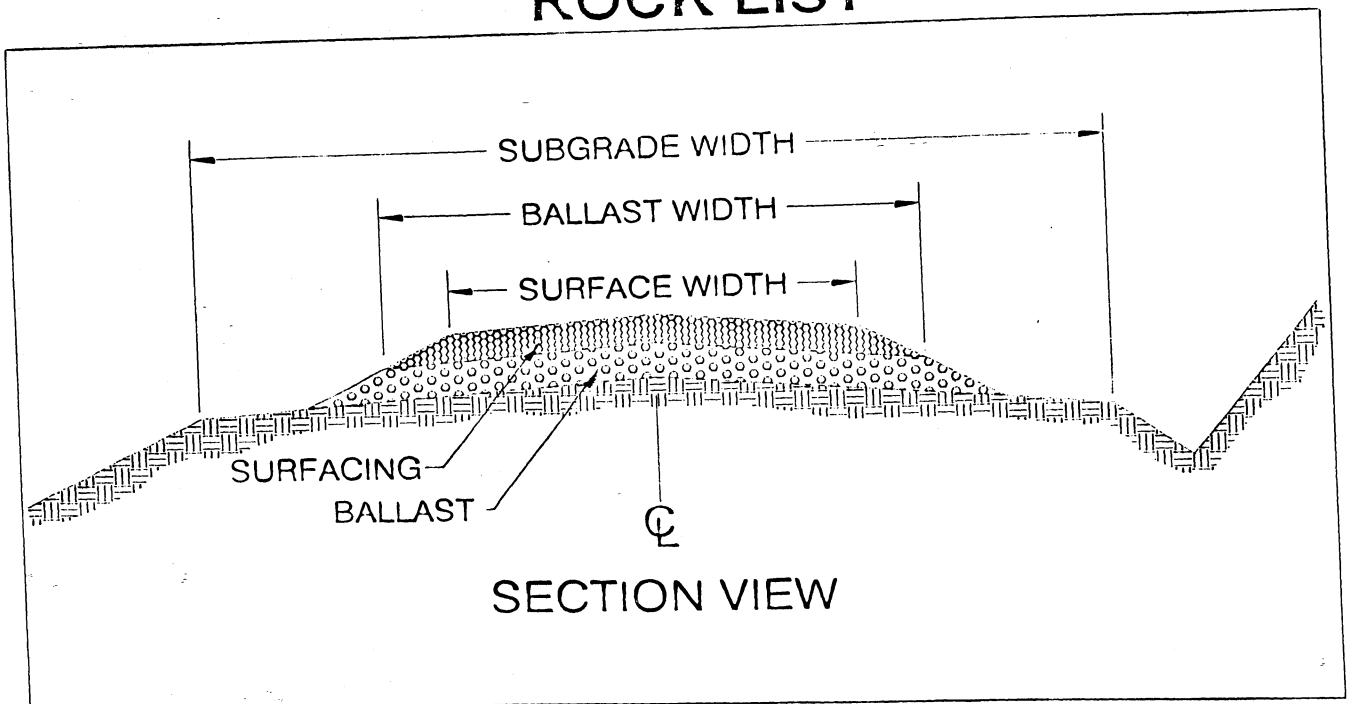
STRUCTURE NOTES

1. Install Headwall - See Detail D1
2. Install Catchbasin - See Detail D1
3. Armor Catchbasin - See Detail D1
4. Armor Ditch
5. Heavy Loose RipRap
6. Light Loose RipRap
7. Step Bevel Pipe Ends
8. Remove Existing Pipe
9. See Rolling Dip Detail D5
10. See Pipe Installation Detail D1
11. Install Energy dissipator - See D1

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Name of Sale: Arden Hill

ROCK LIST

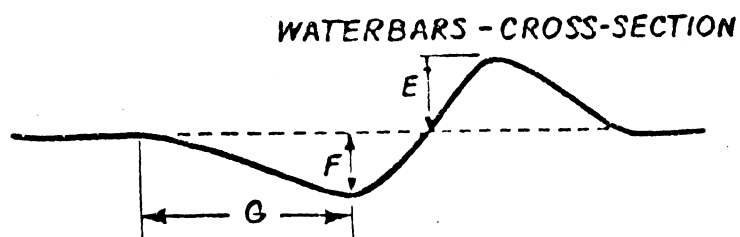
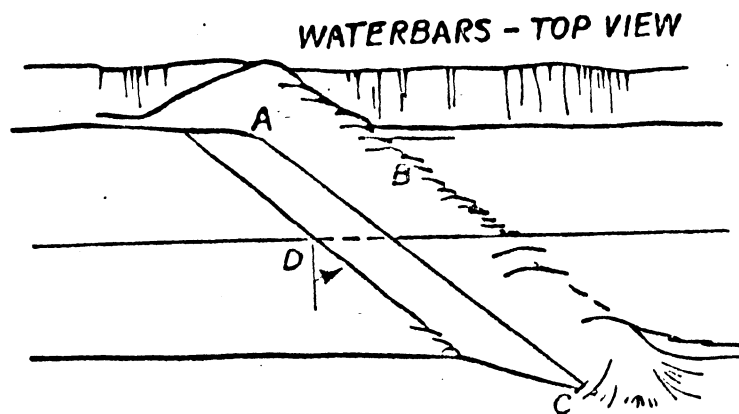


1. ROCK DEPTHS ARE DEFINED AS COMPACTED DEPTHS.
2. QUANTITIES LISTED ARE COMPACTED, LOOSE YARDS DEPENDENT ON SOURCE.
3. ROCK SLOPES SHALL BE 1.5(H) : 1(V).
4. ALL ROCK SOURCES ARE SUBJECT TO APPROVAL BY THE CONTRACT ADMINISTRATOR.

[illegible]

DATE: 5/18/2004

WATERBAR DETAIL



1. WATERBAR CONSTRUCTION FOR FOREST OR RANCH ROADS. WITH LITTLE OR NO TRAFFIC. SPECIFICATIONS ARE AVERAGE AND MAY BE ADJUSTED TO CONDITIONS.
2. A BANK TIE-IN POINT, CUT 6" TO 1 FOOT INTO THE ROADBED.
3. B CROSS DRAIN BERM HEIGHT 1 TO 2 FEET ABOVE THE ROADBED.
4. C DRAIN OUTLET CUT 8" TO 16" INTO ROADBED.
5. ANGLE DRAIN 30 TO 45 DEGREES DOWNGRADE WITH ROAD CENTERLINE, D
6. E UP TO 2 FEET IN HEIGHT.
7. F DEPTH TO 18 INCHES.
8. G 3 TO 4 FEET
9. REMEMBER ENERGY DISSIPATOR, WATERSPREADERS.

WATERBARS